National Aeronautics and Space Administration

Educational Product	
Educators & Students	Grades 5-12

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Educational Topic

Botanist

Related Job Titles:

Biologist, Life Scientist, Biochemist, Ecologist, Agricultural Scientist, Environmental Scientist, Paleontologist

Job Description:

Botanists study plants and their environment. Some study all aspects of plant life, others specialize in areas such as identification and classification of plants, the structure and function of plant parts, the biochemistry of plant processes, the causes and cures of plant diseases and the geological record of plants. Botanists work in a variety of environments both indoors and out. Good physical condition may be required to reach some remote areas where botanists collect plant samples to bring back to the laboratory for further testing. Others work solely in traditional, indoor environments such as laboratories, offices, museums, botanical gardens, or universities where they conduct research and a variety of experiments, write and publish papers, or teach. Many botanists strike a balance between indoor and outdoor environments.

Interests / Abilities:

- Do you like to examine things under a microscope?
- Are you good at observing and then reporting what you see?
- Do you like hiking or being out in nature?
- Can you clearly communicate your ideas to others?
- Are you good at organizing and classifying things?
- Are you curious about how living things function?

Suggested School Subjects / Courses:

- Biology
- Chemistry
- Mathematics
- Environmental studies
- Laboratory research and fieldwork
- Writing and Speech

Education / Training Needed:

The minimum education required for this position is a bachelor's degree in Biology, Biochemistry, Agriculture, Horticulture or related field from an accredited college or university. A bachelor's degree in Botany will generally qualify you for a laboratory technician or technical assistant. A master's degree is required for applied research and managerial positions. A Ph.D. degree is usually necessary for independent research.

Areas of expertise:

- *Taxonomy:* identify and classify plants according to their presumed natural relationship
- *Agriculture:* manipulate genetics to breed crops or prevent disease
- *Pharmaceutical:* study of molecular structure and chemistry of plants and plant extracts to design new medicines
- *Paleobotany:* identify plant fossils or relics in rocks to help identify a geologic age or history of an area
- *Physiology:* study how plants function, including growth, reproduction, photosynthesis, respiration, and movement

Additional Resources:

- American Journal of Botany
  http://www.amjbot.org/
- Astrobiology Summer Academy
  http://academy.arc.nasa.gov/
- Botanical Society
  http://www.botany.org
- Encyclopedia of Plants and Flowers
  http://www.botany.com
- Graduate Student Researchers Program
  http://spacelink.nasa.gov/Instructional.Materials/NASA.Educational.Products/Graduate.Student.Researchers.Program.Brochure/.index.html
- MATHCOUNTS Competition
  http://mathcounts.org/
- Minority University Research and Education Programs
  http://mured.nasaprs.com/
- NASA Cooperative Education Program for college students
  http://spacelink.nasa.gov/Educational.Services/NASA.Education.Programs/Student.Support/NASA.Cooperative.Education.Program/.index.html
- NASA Earth Observatory
  http://earthobservatory.nasa.gov/
- NASA Jobs
  http://nasajobs.nasa.gov/
- NASA Office of Biological and Physical Research
  http://spaceresearch.nasa.gov
- NASA SHARP Internship Program for high-schoolers
  http://www.mtsibase.com/sharp/
- NASA Student Employment
  http://nasajobs.nasa.gov/stud_opps/employment/index.htm

What can I do right now?

- Take summer jobs or internships at parks, laboratories, botanical gardens, nurseries, museums or camps.
- Read books on biology and the environment.
- Borrow or buy a microscope or magnifying glass and look at samples you have collected.
- Participate in science fairs.
- Go for a hike or a walk in your local park and sketch or journal about the things you see.
- Join a local science club or organization.
- Read the book, *The Plant Hunters: Great Botanist-Explorers and the Plants They Sought* by Tyler Whittle (ISBN: 1558215921)
- Information on careers in biochemistry and biological sciences:
  Federation of American Societies for Experimental Biology
  9650 Rockville Pike
  Bethesda, MD 20814
  http://www.faseb.org

- NASA Student Involvement Program student contests
  http://www.nsip.net/index.cfm
- Student's Guide to Astrobiology
  http://www.astrobiology.com/student.html
- Tech-Interns.com
  http://www.tech-interns.com/

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http://ehb2.gsfc.nasa.gov/edcats/educational_topic

Your evaluation and suggestions are vital to continually improving NASA educational materials.
Thank you.

http://quest.nasa.gov/people/index.html